NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

Irrigation Pit or Regulating Reservoir

(No.)

Code 552**A**

Irrigation Pit

Definition

A small storage reservoir constructed to regulate or store a supply of water for irrigation.

Scope

This standard applies to open pits excavated below the ground surface to intercept and store either surface water or unconfined groundwater for irrigation. It applies to pits if part of the water is impounded above natural ground, provided that the depth of water above the ground surface, as measured at the spillway crest elevation, does not exceed 3 ft.

This standard establishes the minimum acceptable level for the planning and functional design of irrigation pits. It does not include detailed criteria or construction specifications for individual pits or components of the storage facility.

Purpose

To collect and store water until it can be used beneficially to satisfy crop irrigation requirements.

Conditions where practice applies

This practice applies only to sites meeting all the following criteria and conditions:

1. The existing water supply available to the irrigated area is sufficient to meet conservation irrigation requirements during part or all the irrigation season.

2. Construction of an irrigation pit is the most practical means of obtaining a needed additional supply of water.

3. An adequate supply of good-quality water is available for storage from surface runoff, streamflow, or from a subsurface source.

4. Topographic, geologic, water table, and soils conditions at the site are satisfactory for the feasible development of the irrigation pit.

5. If surface runoff enters the pit, the contributing drainage area is or can be protected against erosion so that normal sedimentation does not materially shorten planned life of the pit.

Design criteria

Capacity. Irrigation pits shall be designed to have a usable capacity sufficient to satisfy irrigation requirements in the design area throughout the growing season of the crop or crops being irrigated. In computing capacity requirements, due consideration shall be given, where applicable, to groundwater in-flow, surface runoff, precipitation, evaporation, and seepage. Additional capacity shall be provided as necessary for sediment storage. The usable capacity of a pit that depends wholly on groundwater as a source of supply shall be that part of the point that is below the static water level.

Pit design. Irrigation pits shall be designed according to the criteria for excavated ponds in the standard for ponds (378).

Outlet works. Suitable outlet works shall be provided for the controlled release of irrigation water. The capacity of the outlet works shall be no less than that required to provide the outflow rate needed to meet peak period irrigation system demands.

Plans and specifications

Plans and specifications for irrigation pits shall be in keeping with this standard and shall describe the requirements for properly installing the practice to achieve its intended

purpose.

Irrigation Pit Specifications

Irrigation pits shall be constructed according to the specifications for ponds (378).

Planning considerations for water quantity and quality

Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Effects on downstream flows or aquifers that would affect other water uses or users.
3. Potential for irrigation water management.

Quality

1. Effects on erosion and the movement of sediment, pathogens, and the soluble and sediment-attached substances carried by runoff.
2. Effects on the movement of dissolved substances to ground water.
3. Short-term and construction-related effects on the quality of downstream water courses.
4. Potential of uncovering or redistributing toxic material.
5. Effects on wetlands or water-related wildlife habitats.
6. Effects on the visual quality of water resources.

NOTEKEEPING

Design Survey

The design survey must be in sufficient detail to allow a reasonably accurate determination of the drainage area, storage capacity, and yardage. This may be accomplished by obtaining a few key elevations in the pit area, and a study of aerial photographs and quadrangle maps.

The use of approved charts and tables may permit the design survey and construction layout on many smaller pits to be carried on as one operation – a desirable procedure.

A soils investigation shall be made on all irrigation pits and the findings recorded on Form LA-315. If there is a water table, the depth at which it exists will be recorded.

In those cases where the landowner decides not to construct the pit, the data shall be retained in the field office files for a reasonable period of time in the event the farm changes ownership, or the landowner later decides to proceed with construction.

Provide special construction specifications where unusual conditions require special care in construction or where specific types of construction machinery are required.

Construction Layout

Profile and/or cross-section the proposed irrigation pit location as needed to set cut and slope stakes.

Planned yardage may be determined by using yardage tables, or calculating. Where the base is irregular, the end areas shall be plotted and measured, and the yardage obtained by average end areas.

Set enough well marked stakes to guide the farmer or contractor in installing all appurtenant structures necessary for operation of the pit.

Construction Check

Take at least one longitudinal and one lateral cross-section. Prepare sketch of pit on Form LA-ENG-14 and show dimensions.

Record location, dimensions, elevations and kind of material in all appurtenant structures.

Due to the inaccuracies of earthmoving equipment commonly used, excavated pits will be acceptable when the steepest sections of the side slopes of the completed pit are slightly steeper than the minimum, provided the required yardage has been removed, the required depth has been obtained and the bottom and top dimensions have been equaled or exceeded.

Recording Data

Field notes will be recorded on Form LA-ENG-14.

Check the notes carefully to determine that all specifications have been met. Date and sign statement, “This practice meets specifications.” Note any exceptions.

Recording Completed Practice

Show completed pits in red on field office copy of the conservation plan map, or, if not available, on aerial photograph or overlay.

Filing Notes and Records

See National Handbook for Resource Conservation Planning, Louisiana Supplement.